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IS 8513 (1977): Aluminium alloy wire for cold forged rivets for aircraft purposes (Alloy 55000) [MTD 7: Light Metals and their Alloys]



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IS : 8513 - 1977

Indian Standard
SPECIFICATION FOR
ALUMINIUM ALLOY WIRE FOR
COLD FORGED RIVETS FOR AIRCRAFT
PURPOSES (ALLOY 55000)

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**AMENDMENT NO. 1 AUGUST 1992
TO
IS 8513 : 1977 SPECIFICATION FOR ALUMINIUM
ALLOY WIRE FOR COLD FORGED RIVETS FOR
AIRCRAFT PURPOSES (ALLOY 55000)**

(Page 3, clause 0.3, Foreword) — Insert the following additional paragraph after 0.3 :

“This standard is one of a series of Indian Standards on aluminium and aluminium alloy wires for cold forged rivets for aircraft purposes. Other standards in this series are the following:

IS 8514 : 1977	Aluminium alloy wire for cold forged rivets for aircraft purposes (alloy 24530)
IS 8515 : 1977	Aluminium wire for cold forged rivets for aircraft purposes (alloy 19500)
IS 8936 : 1977	Aluminium alloy wire for cold forged rivets for aircraft purposes (alloy 24350)
IS 8937 : 1979	Aluminium alloy wire for cold forged rivets for aircraft purposes (alloy 24345)
IS 8938 : 1979	Aluminium alloy wire for cold forged rivets for aircraft purposes (alloy 24345)

With the publication of seperate standards for individual alloy wires for manufacturing cold forged rivets, IS 5902 : 1970 ‘Aluminium and aluminium alloy rivet stock for cold forged rivets for aircraft purpose’ has been withdrawn.”

Indian Standard

SPECIFICATION FOR ALUMINIUM ALLOY WIRE FOR COLD FORGED RIVETS FOR AIRCRAFT PURPOSES (ALLOY 55000)

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Indian Standard

SPECIFICATION FOR ALUMINIUM ALLOY WIRE FOR COLD FORGED RIVETS FOR AIRCRAFT PURPOSES (ALLOY 55000)

0. FOREWORD

0.1 This Indian Standard was adopted by the Indian Standards Institution on 27 July 1977, after the draft finalized by the Light Metals and Their Alloys Sectional Committee had been approved by the Structural and Metals Division Council.

0.2 Rivets of aluminium 5 percent magnesium alloy, which has excellent weldability characteristics, are used in the aircraft industry. This standard has been prepared to cover the requirements of wires, used in manufacturing rivets, with a view to facilitating mutual understanding between the supplier and the purchaser of rivet stock.

0.3 In the preparation of this standard, due weightage has been given to international co-ordination among standards and practices prevailing in different countries by deriving assistance from the following publications :

BS 3L 58 Wire for solid cold-forged rivets of aluminium — 5 percent magnesium alloy. British Standards Institution.

AMTY 498-4-63 Aluminium alloy wire. State Committee of Aviation Technology of USSR.

MIL-W-7986-57 Wire and rod, aluminium and aluminium alloy, for die heading. U. S. Federal Specification.

0.4 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS: 2-1960*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

1. SCOPE

1.1 This standard covers the requirements of drawn aluminium magnesium alloy wire used for cold forging of rivets for aircraft purposes.

*Rules for rounding off numerical values (revised).

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2. MATERIAL

2.1 The material shall be made from aluminium and alloying constituents with or without approved scrap at the discretion of the manufacturer and shall conform to the chemical composition specified in 5.1. The wire shall be drawn out of extruded or rolled stock.

3. INSPECTION AND TESTING PROCEDURES

3.1 This standard shall be used in conjunction with IS : 8474-1977*.

4. FREEDOM FROM DEFECTS

4.1 The drawn wire shall be free from harmful defects, such as deep die marks, scratches, seams, ovality, transverse surface cracks, blisters, etc.

5. CHEMICAL COMPOSITION

5.1 Chemical composition of each cast, when analysed in accordance with IS : 504-1963† shall be as follows :

<i>Element</i>	<i>Percent</i>
Copper	0.10 <i>Max</i>
Magnesium	4.5-5.5
Silicon	0.3 <i>Max</i>
Iron	0.5 <i>Max</i>
Manganese	0.5 <i>Max</i>
Chromium	0.25 <i>Max</i>
Zinc	0.20 <i>Max</i>
Aluminium	Remainder

5.1.1 Titanium and other grain refining elements may be present in the material at option of the supplier, provided the total content does not exceed 0.2 percent.

6. CONDITION

6.1 The wire shall be supplied in annealed condition.

*Procedure for inspection and testing of aluminium and aluminium alloy wires (for rivets) for aircraft purposes.

†Methods of chemical analysis of aluminium and its alloys (*revised*).

7. MECHANICAL PROPERTIES

7.1 Tensile Strength — Tensile strength obtained on test specimens selected and prepared in accordance with IS : 8474-1977* shall be not less than 265 N/mm^2 (27.0 kgf/mm^2).

NOTE — For the guidance of the designer, it may be mentioned here that shear strength is expected to be 160 N/mm^2 (16.5 kgf/mm^2).

7.2 Upsetting Test — Upsetting test shall be carried out on one wire specimen from each coil in accordance with IS : 8474-1977* and the test piece shall not reveal any defect on completion of the test. The height of projecting portion of the wire shall be 1.5 times the diameter.

8. TOLERANCES ON DIAMETER

8.1 Tolerances on diameter of the wire shall be in accordance with IS : 8474-1977*.

9. CORROSION PREVENTION

9.1 All coils shall be adequately protected against corrosion by any suitable temporary protective coating, such as neutral grease or oil, and packed in waterproof paper and secured properly.

10. IDENTIFICATION

10.1 Each coil, passed by the inspector, shall be tagged with a metal label bearing the mark of the inspector and such other marking as shall ensure full identification of the material.

10.2 Each coil of wire shall be colour-coded in accordance with IS : 2479-1969† to the satisfaction of the Inspecting Authority.

11. CERTIFICATION

11.1 All supplies shall be accompanied by certificates for freedom from defects, chemical composition, condition and mechanical properties as laid down in 4, 5, 6 and 7 respectively or as required by the Inspecting Authority.

11.2 The manufacturer shall, when required, supply free of charge a copy of the works analysis of the material. Works analysis is defined as the routine analysis conducted by the manufacturer in order to control the quality of the materials.

*Procedure for inspection and testing of aluminium and aluminium alloy wires (for rivets) for aircraft purposes.

†Colour code for the identification of aluminium and aluminium alloys for general engineering purposes (*first revision*).

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